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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/667,670	09/23/2003	Jae-Seong Shim	1293.1925	9099
49455	7590	03/09/2005	EXAMINER	
STEIN, MCEWEN & BUI, LLP 1400 EYE STREET, NW SUITE 300 WASHINGTON, DC 20005				WAMSLEY, PATRICK G
		ART UNIT		PAPER NUMBER
				2819

DATE MAILED: 03/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/667,670	SHIM ET AL.	
	Examiner	Art Unit	
	Patrick G. Wamsley	2819	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 10 February 2005.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-40 and 75-82 is/are pending in the application.
- 4a) Of the above claim(s) 35-40 and 78-82 is/are withdrawn from consideration.
- 5) Claim(s) 14-34, 76 and 77 is/are allowed.
- 6) Claim(s) 1-13 and 75 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 23 September 2003 is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ . |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>10/20/2003</u> . | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| | 6) <input type="checkbox"/> Other: _____ . |

DETAILED ACTION

Restriction

Claims 35-40 and 78-82 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction requirement in the reply filed on 02/10/2005.

Applicant's election with traverse of claims 1-34 and 75-77 in the reply filed on 02/10/2005 is acknowledged. The traversal is on the grounds that the non-elected claims are closely related to the elected claims. This is not found persuasive because applicant's that a "serious burden" does not exist appears to largely rely upon the classification of all claims in Class 341, not upon the definition set forth in the M.P.E.P. The examiner does not accept applicant's claim that the search would be limited to Class 341, noting that Classes 375 and 714 are likely to also be germane. Moreover, applicant has not rebutted the assertion that the inventions are patentably distinct, as shown by the different features found in the claims.

Regarding applicant's second argument, combining Groups I and II but excluding the others, the examiner is not persuaded. No convincing evidence was presented to show why these groups are unpatentable over each other. Moreover, the descrambling limitations found in Group II would require an expanded search.

The requirement is still deemed proper and is therefore made FINAL.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Drawings

The drawings are objected to because of the following informalities:

Figure 4, Block 20: Change “USIGN” to -- USING --.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 4-11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

While claim 1 excludes a "separate DC control code conversion table," claim 4 presents separate code conversion tables, a main code table and a DC control sub code table. These descriptions currently appear to contradict each other. Applicant should amend claim 4 to clarify the status of the DC control sub code table relative to the exclusion of a "separate" table in the independent claim.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-3, 12-13, and 75 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,002,718 to Roth, hereafter Roth, in view of U.S. Patent 6,177,890 to Keirn et al, hereafter Keirn.

For claim 1, Roth discloses a data modulating method comprising the steps of performing run-length-limited, hereafter RLL, modulation, and providing a code stream having a minimized DC component. As described in the abstract, Roth's encoder uses a single overlapping table for all states rather than using multiple tables. Claim 75 restates these method limitations in computer medium format.

Unlike claims 1 and 75, Roth is silent regarding the steps of dividing an input data stream by a predetermined length and multiplexing data. In contrast, Keirn uses a scrambler [406] with an input data stream. For claims 2 and 3, as best understood, Keirn's operation corresponds to the recited scrambling and interleaving functions. At the time of the invention, it would have been obvious to one of ordinary skill in the art to have applied Keirn's teachings to Roth. The motivation would have been to provide a high-efficiency encoding scheme, as suggested by Keirn [col. 2, lines 18-19].

For claim 12, insertion of a sync pattern is a conventional encoding operation.

Keirn's data format includes a sync mark [302], implying that a sync mark was inserted encoding process.

For claim 13, selection of "d" and "k" parameters for RLL codes is arbitrary, depending upon various coding constraints. While Keirn describes a (13,13) code [col. 5, line 10] and Roth presents (2,10) and (2,12) codes [column 4], the examiner believes that these values of d and k are merely exemplary, as one of ordinary skill in the art could flexibly use many values of d and k. Moreover, the (2,7) value recited in claim 13 appears to lack criticality, as several other d,k values are disclosed as applicable to the encoder of the instant invention.

Allowable Subject Matter

Claims 14-34, 76, and 77 are allowed.

Claims 4-11 would be allowable if rewritten to overcome the rejections under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: the references of record neither reveal nor render obvious the recited combination, including the use of multiplexed pseudo-random data streams, as found in independent claims 14, 20, 76, and 77, and the removal of unnecessary code words from a main table, as found in claim 4.

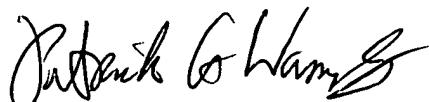
Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent 6,604,219 to Lee et al describes DC control of a multilevel signal.

U.S. Patent 6,441,756 to Shim and Application 10/791,268 to Shim et al appear related to the instant invention. U.S. Patent 5,742,243 to Moriyama discloses a method for reducing DC components in RLL codes.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick G. Wamsley whose telephone number is (571) 272-1814. The official facsimile number is (703) 872-9306. An alternate facsimile number, (571) 273-1814, should only be used for unofficial documents.



Patrick G. Wamsley

March 4, 2005